



Alternative Fuel Vehicles in State Energy Assurance Planning

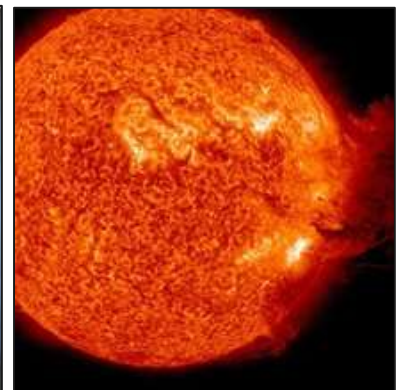


July 17, 2014

Webinar hosted by the National Association of State Energy Officials (NASEO), with support from the U.S. Department of Energy's Clean Cities Program

+ Energy Assurance is the Capability to:

- **Plan and Respond** to events that disrupt energy supply and assuring a rapid return to normal conditions. This is a coordinated effort involving the private energy sector's response, augmented by Local, State and Federal governments as needed; and
- **Mitigate Risks** through policies, programs and investments that provide for a more secure and resilient energy infrastructure that also reduces interdependencies impacts.
 - Where risk is a function of consequences, vulnerabilities and threats.



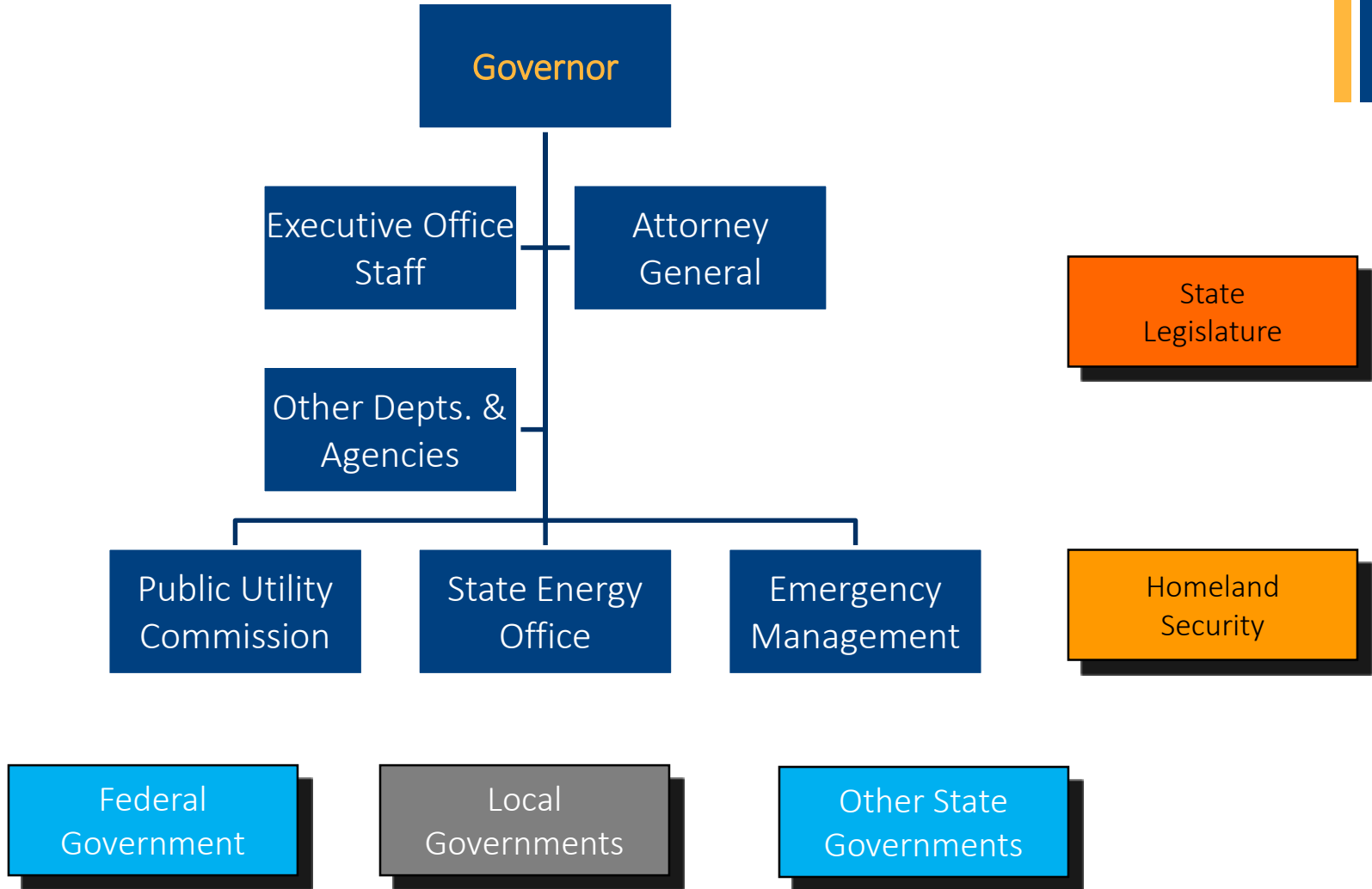


State & Local Energy Assurance Program

- Energy Offices and NASEO have a 3+ decades track record in planning responses to and mitigating impacts of energy supply disruptions
- 48 States, 2 Territories, the District of Columbia and 43 Cities have plans
- Activities:
 - Develop new or update existing State Energy Assurance Plans
 - Create State-level expertise on Smart Grid systems, cyber security, interdependencies, and communications
 - Develop processes for tracking energy supply disruptions
 - Conduct energy emergency exercises
 - Revise State policies, procedures and practices
- Benefits for States and Cities:
 - New or updated energy assurance plans
 - Improved coordination across State agencies, among States, and regions
 - Improved recovery and restoration capabilities and response times



State Energy Emergency-Related Organizations



+ Energy Assurance Plans

Common planning elements

- Description of energy sources, infrastructure, distribution, system capacity, utilization, flows and end uses
- Organizational roles, responsibilities and legal authorities
- Emergency communications procedures (internal and external)
- Methods for tracking supply disruption and historical events
- Contingency plans for responding to shortages of:
 - Petroleum, and alternative transportation fuels
 - natural gas
 - Electricity, and all sources of energy used for power generation
- Energy Infrastructure risk and vulnerability assessments
- Policies, programs and regulations that contribute to the security and resiliency of energy infrastructure and reduce risks

+ AFVs in Energy Assurance Planning

Preliminary findings from NASEO analysis show there is significant interest and understanding of the benefits of AFVs in supporting energy assurance planning; and meaningful opportunities to further enhance these plans.

Of the existing energy assurance plans that do address the role of AFVs, they only do so ***in a limited way***. Almost across the board, there is an opportunity to incorporate more discussion of the benefits of AFVs in energy assurance planning and stronger recommendations for realizing these benefits.

Lack of data can be a barrier to more fully incorporating AFVs in energy assurance plans. Planners need both qualitative and quantitative data about the vehicle and infrastructure market in their state (and potentially in surrounding states), to optimize the use and coordination of AFVs in the event of an emergency. To access needed data, energy assurance planners should engage state and local stakeholders.

There is also a need to share more specific examples of how AFVs can be used to respond to shortages of petroleum products and ensure that essential public service needs can be met.

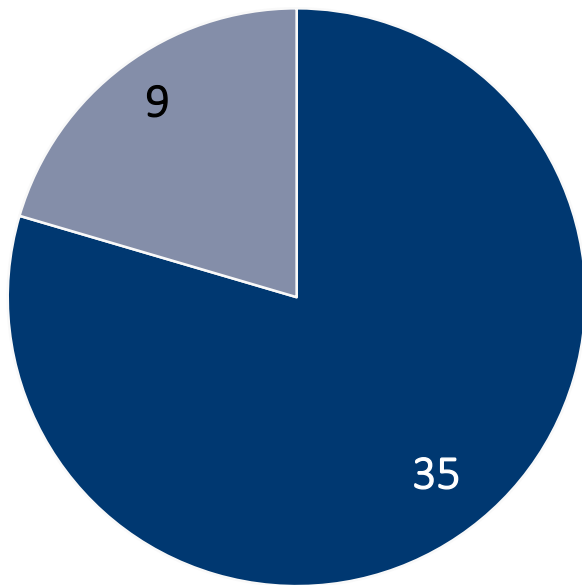
+ Addressing the Weak Link: Transportation Fuels

- State petroleum contingencies generally are less developed than electric and natural gas contingency plans which historically have been more regulated and centrally controlled.
- Petroleum products provide 92% of the total energy needed to supply the transportation sector in the United States.
- Planning and responding to petroleum shortages presents many challenges, supply infrastructure is diverse and with many players (disintegrated), anti-trust laws prohibit the sharing information that could result in a competitive advantage. No single entity fully knows the specific supply picture at the local, state or regional levels.
- Less regulatory authority over how petroleum is supplied and distributed generally market driven.
- Shortages can develop slowly over time or a major disaster can disrupt the petroleum supply chain.
- Less data, and more complexity requires more situational awareness and a wider range of tools to respond when shortages of petroleum products occur.



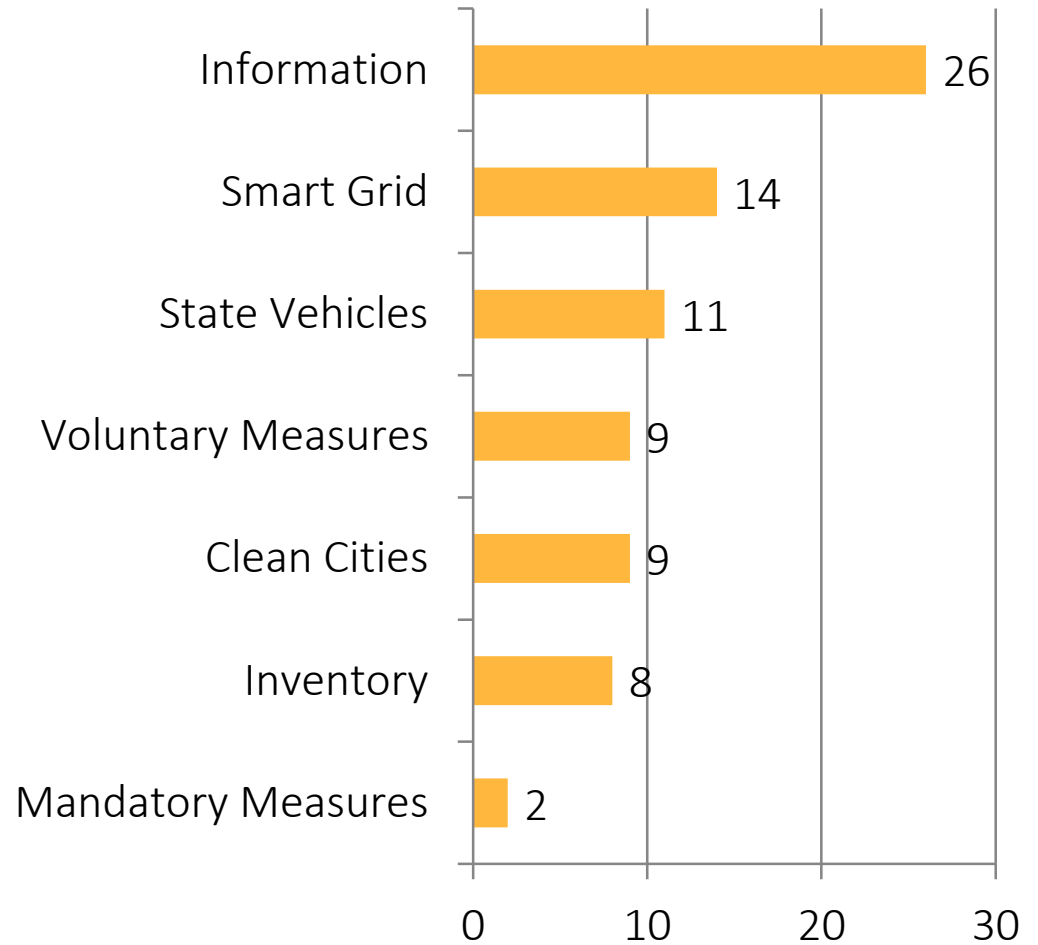
Integrating AFVs in Energy Assurance

Current Status of Plans



■ Mention ■ No mention

Most Common References to AFVs



Building and Facilitating the Exchange of AFV Data for Energy Assurance Planning

| Data Point | Description/Rationale | Potential Data Sources |
|---|---|--|
| Number/location of AFVs Ownership/management of AFVs | Data points capture the size and location of state-owned, municipally-owned, or privately-owned fleets that emergency responders may be able to use to assist in evacuation, debris removal, or other response/recovery efforts. | <ol style="list-style-type: none"> 1. State and municipal agencies that manage AFV fleets 2. Local Clean Cities Coalitions |
| Fuel source of AFVs | Data points capture the alternative fuel source of AFVs that may be deployed in the event of an energy emergency, in addition to their typical uses and capabilities (in terms of range, efficiency, fueling needs, and ability to carry cargo). | <ol style="list-style-type: none"> 1. State, local, and private fleet managers |
| Typical uses and capabilities of AFVs | Data points capture the alternative fuel source of AFVs that may be deployed in the event of an energy emergency, in addition to their typical uses and capabilities (in terms of range, efficiency, fueling needs, and ability to carry cargo). | <ol style="list-style-type: none"> 2. NREL TransAtlas |
| Fueling/charging locations and fuel storage | Data points pinpoint locations of AFV fueling and charging stations and other critical infrastructure. | <ol style="list-style-type: none"> 1. AFDC 2. NREL TransAtlas 3. DHS OneView GIS |
| Cost of AFVs | Data points support decision making and identify lifecycle costs and benefits of state, local, or private purchase of AFVs and/or fleet conversions. | <ol style="list-style-type: none"> 1. AFDC 2. Clean Cities Coalitions |
| Partners and stakeholders | Data point enables energy assurance planners to engage other state and local agencies (such as departments of transportation or highway administration) and groups (such as businesses and Clean Cities Coalitions) in the energy assurance planning process. | <ol style="list-style-type: none"> 1. State and local energy offices 2. Clean Cities Coalitions 3. AFDC |



Data Sources

| Data Source | Description | Accessibility | Website |
|---|--|--|---|
| Alternative Fuels Data Center (AFDC) | AFC datasets include AFV fueling and charging locations by state, boundaries and population coverage of Clean Cities Coalitions, truck stop electrification facilities, and efficiency/savings estimates of AFVs by type. | Publicly available | http://www.afdc.energy.gov/ |
| National Renewable Energy Laboratory (NREL) TransAtlas | The TransAtlas mapping tool uses Google Maps and customized queries to display the locations of existing and planned alternative fueling stations, concentrations of different vehicle types, alternative fuel production facilities, roads and political boundaries | Publicly available | http://maps.nrel.gov/transatlas |
| Department of Homeland Security (DHS) OneView GIS System | OneView is a geospatial visualization tool operated by DHS and designed for the use of homeland security partners in protecting the nation's critical infrastructure and key resources. | Limited access by those that have been authorized to access The Homeland Security Information Network (HSIN) | https://gii.dhs.gov/oneview |



NASEO Resources

FACT SHEET:
Alternative Fuel Vehicles in Energy Assurance Planning

What are alternative fuel vehicles (AFVs)?
According to the U.S. Department of Energy, "AFVs are any dedicated vehicle or dual-fueled vehicle designed to run on at least one alternative fuel," which may include ethanol, electricity, liquefied, compressed or liquefied natural gas, and hydrogen, among others.

What is energy assurance planning?
Energy assurance involves a mix of activities and falls into three main categories: (1) preparation and planning, (2) mitigation and response, and (3) education and outreach. Its goal is to achieve a reliable, secure, and reliable energy infrastructure that is also resilient to extreme events, supply and demand shocks, and a variety of natural and man-made threats.

What are the benefits of integrating AFVs in energy assurance planning?
During preparation and plan development, the use of vehicles with flexible or alternative fueling capabilities can help mitigate demand spikes for conventional fuels and help meet essential public services needs for recovery, such as utility restoration, waste removal, and operations. In the long-term, incorporating AFVs into energy assurance plans enhance the ability of states to optimize the use and location of various types of AFVs during energy emergencies, while using their planning and purchasing behavior to increase market deployment of AFVs.

How prevalent are AFVs in current energy assurance plans?
NASEO has reviewed the current energy assurance programs, and found that 11 states have incorporated language about AFVs into their plans, with varying degrees of specificity. The way that energy assurance plans have addressed AFVs include:

- Providing an inventory of existing or planned AFV fleets and fueling/charging stations within the state;
- Offering information about state laws, policies, programs and grantee efforts at Clean Cities Coalitions related to AFVs;
- Discussing the potential impact of increased AFV demand on the state's existing electric and natural gas infrastructure, and strategies to integrate electric vehicles with smart grid programs;
- Including voluntary or mandatory measures such as AFV purchasing requirements that the state must implement in order to respond to or mitigate the impacts of a fuel supply disruption.

These state energy assurance plans offer options and examples for states to augment the role of AFVs in their energy emergency response processes and realize the associated benefits. Coordination is needed among energy officials (locally, state, and federal) to ensure that Clean Cities Coalitions, state and local fleet managers, and other stakeholders to improve the integration of AFVs in efforts to promote energy reliability and security.

About our Project
For nearly three decades, State Energy Offices and the National Association of State Energy Officials (NASEO) have worked to plan, prepare, and mitigate energy supply disruptions. Our focus has been on the development of energy assurance plans, which are designed to ensure that critical services and infrastructure are able to continue to operate during times of energy supply and demand shocks, and a variety of natural and man-made threats.

As another related initiative, the NASEO has also been working to help states and regional energy suppliers, and the private sector, to improve their energy security. This work includes the development of energy assurance plans, which are designed to ensure that critical services and infrastructure are able to continue to operate during times of energy supply and demand shocks, and a variety of natural and man-made threats.

With support from the U.S. Department of Energy (DOE), Clean Cities Program, the National Association of State Energy Officials (NASEO) is working to help states and regional energy suppliers, and the private sector, to improve their energy security. This work includes the development of energy assurance plans, which are designed to ensure that critical services and infrastructure are able to continue to operate during times of energy supply and demand shocks, and a variety of natural and man-made threats.

For more information or to become involved in this project, please contact Sarah Smith, Program Manager, at SSmith@naseo.org.

State Energy Assurance Guidelines

NASEO
National Association of State Energy Officials

November 11, December 2009

Petroleum Shortage Supply Management: Options for States

NASEO
National Association of State Energy Officials

2107 Wilson Boulevard, Suite 800
Arlington, VA 22201
www.naseo.org

Integration of Alternative Fuel Vehicles in State Energy Assurance Planning

National Association of State Energy Officials
Sarah Smith, Program Manager, and Jeff Pallas, Energy Security Director
June 2014

Introduction and the Challenge

State energy assurance planning supports a robust, secure, and reliable energy infrastructure that is also resilient to extreme events, supply and demand shocks, and a variety of natural and man-made threats. As another related initiative, the NASEO has also been working to help states and regional energy suppliers, and the private sector, to improve their energy security. This work includes the development of energy assurance plans, which are designed to ensure that critical services and infrastructure are able to continue to operate during times of energy supply and demand shocks, and a variety of natural and man-made threats.

With the continued growth of the alternative fuel vehicle (AFV) market and increasing coordination between state energy officials and local Clean Cities coalitions, there is an opportunity to further enhance, update, and update state energy assurance plans and address short- and long-term energy reliability and security. This report provides a guide to energy assurance planning, including the role of AFVs in energy assurance planning. The report also provides a guide to energy assurance planning, including the role of AFVs in energy assurance planning. The report also provides a guide to energy assurance planning, including the role of AFVs in energy assurance planning.

Using AFVs in Energy Assurance Planning

If properly aligned, state energy assurance planning and alternative AFV and infrastructure deployment can have a mutually beneficial relationship. As another related initiative, the NASEO has also been working to help states and regional energy suppliers, and the private sector, to improve their energy security. This work includes the development of energy assurance plans, which are designed to ensure that critical services and infrastructure are able to continue to operate during times of energy supply and demand shocks, and a variety of natural and man-made threats.

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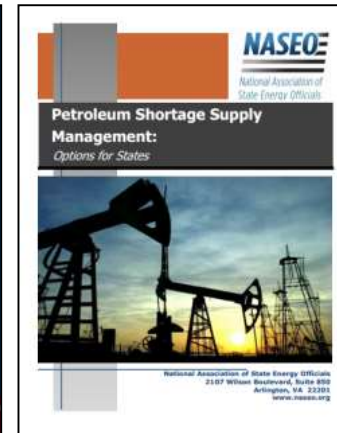
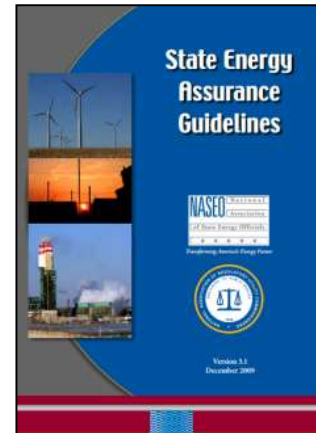
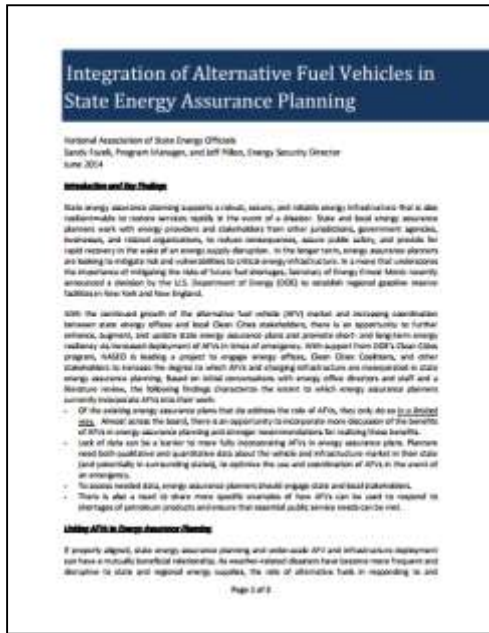
Energy Assurance-Alt Fuel Vehicle Fact Sheet (2014)

Highlights important information about the links between alternative fuel vehicle deployment and state energy assurance planning, including a status update on how current state energy assurance plans address AFVs.

<http://naseo.org/committee-transportation>



NASEO Resources



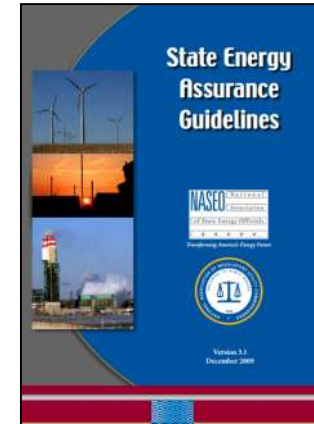
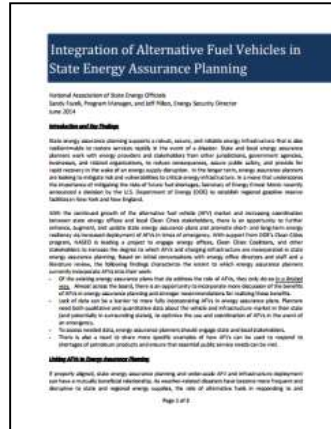
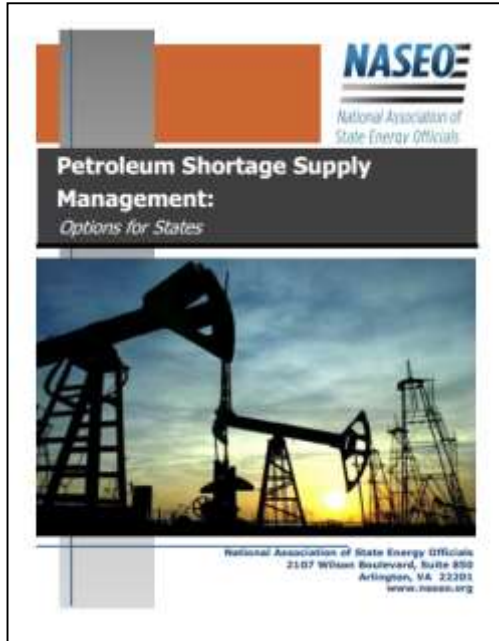
Briefing Memo: Integration of Alternative Fuel Vehicles in State Energy Assurance Planning (2014)

Assesses state energy assurance plans and discusses strategies to more fully integrate and define the role of AFVs in these plans, with a focus on the crucial role Clean Cities coordinators and local stakeholders play in the energy assurance planning process.

<http://naseo.org/committee-transportation>



NASEO Resources



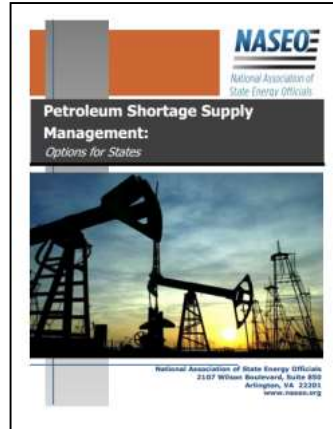
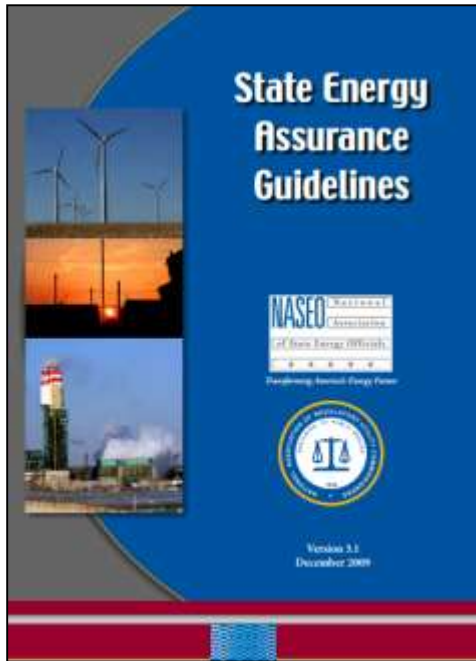
Petroleum Shortage Supply Management: Options for States (2012)

A resource for states developing energy assurance plans. Provides a template for petroleum response measures and longer term planning initiatives and further depth on effective planning elements.

[http://naseo.org/data/sites/1/documents/publications/Petroleum Shortage Supply Management.pdf](http://naseo.org/data/sites/1/documents/publications/Petroleum%20Shortage%20Supply%20Management.pdf)



NASEO Resources



State Energy Assurance Guidelines (2009)

Discusses pros and cons of various types of transportation technologies in energy assurance planning. Highlights strategies to use renewable and alternative fuels to enhance energy options in Minnesota, Illinois, and Oregon.

http://naseo.org/data/sites/1/documents/publications/publications/State_Energy_Assurance_Guidelines_Version_3.1.pdf



Thank you!

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+ Consequences

- Consequence analysis should address both direct and indirect effects of any hazards including: natural disaster, infrastructure failure, pandemic, cyber or terrorist attack or other disruptive events.
- Under the National Infrastructure Protection Plan (2013 Update), the U.S. Department of Homeland Security works with Sector Specific Agencies and security partners to examine the inherent characteristics of assets, systems, or networks to identify “worst-case” consequences.
- Consequences for the national-level comparative risk assessment can be divided into four main categories:
 - Human impact, fatalities and injuries
 - Economic impacts, primary/secondary
 - Impact on public confidence
 - Impact on government capability



Aftermath of Superstorm Sandy New York City

+ Why Invest in Reliability and Resilience?

To reduce human and economic consequences

- Weather-related power outages are estimated to have cost the U.S. economy an inflation-adjusted annual average of \$18 - \$33 billion.
- Since 1980, the United States has sustained 144 weather disasters whose damage costs reached, or exceeded, \$1 billion and seven of the ten costliest storms in U.S. history occurred between 2004 and 2012.
- Annual costs fluctuate significantly and are greatest in the years of major storms such as Hurricane Ike in 2008, a year in which cost estimates range from \$40 - \$75 billion, and Superstorm Sandy in 2012, a year in which cost estimates range from \$27 - \$52 billion.

The Economic Benefits of Increasing Electric Grid Resilience to Weather Outages, The White House Council of Economic Advisers and the U.S. Department of Energy, August 12, 2013

<http://energy.gov/articles/white-house-council-economic-advisers-and-energy-department-release-new-report-resiliency>